

Size and Age Characteristics of Leech Lake Burbot in 2002 and 2015

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Introduction

- Burbot (*Lota lota*) are the only freshwater member of the Lotidae.
- Burbot are seldom managed in the United States due to lack of public interest in the species.
- Burbot are generally slow-growing and long-lived.
- Burbot are a cold-water sensitive species that may be negatively effected by increasing water temperatures, eutrophication, and other anthropogenic factors.

Objective

- Assess potential changes in size, age, condition, growth, and mortality of Burbot in Leech Lake, MN between 2002 and 2015.

Methods

- Sampled Burbot were caught by anglers at the International Eelpout Festival in Walker, MN, February 2002 and 2015.
- Measured total length (TL, ± 1 mm), weighed (W, ± 10 g), and identified sex for each fish.
- Removed sagittal otoliths from 218 Burbot in 2002 and 173 Burbot in 2015.
- Ages were estimated by examination of otoliths under a dissecting microscope in 2002 and from digital images of whole otoliths captured with a dissecting microscope in 2015.



Results

- Size structure differed significantly between years ($p < 0.001$). Mean length was 509 mm in 2002 and 538 mm in 2015.
- Age structures differed significantly between years ($p < 0.001$). Mean age was 6.7 years in 2002 and 5.9 years in 2015.

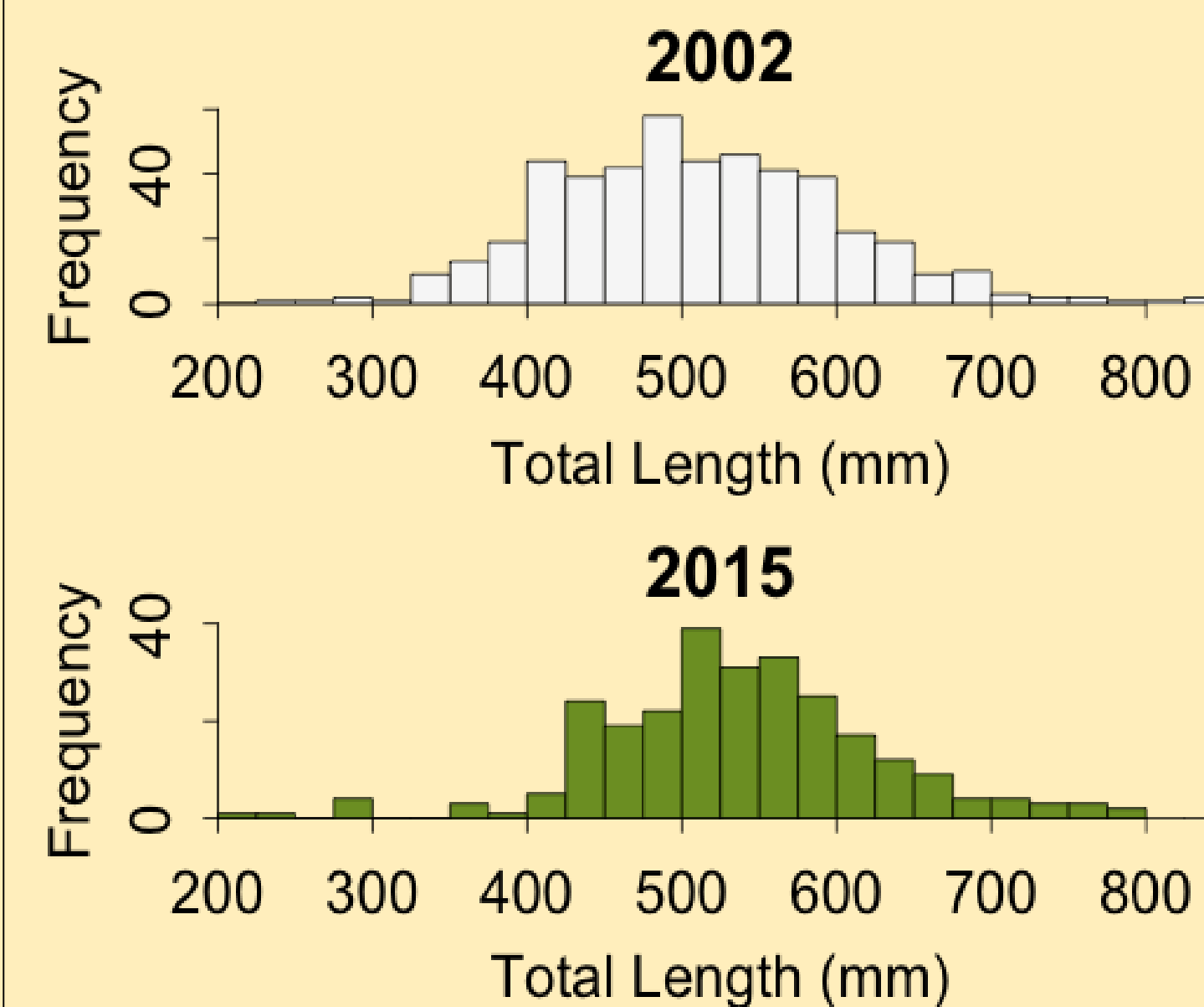


Figure 1. Length frequencies

- Length versus age slopes did not differ between years ($p = 0.398$). Mean lengths at sampled ages were 76 mm (95% CI = 39-112) greater in 2015 than in 2002.

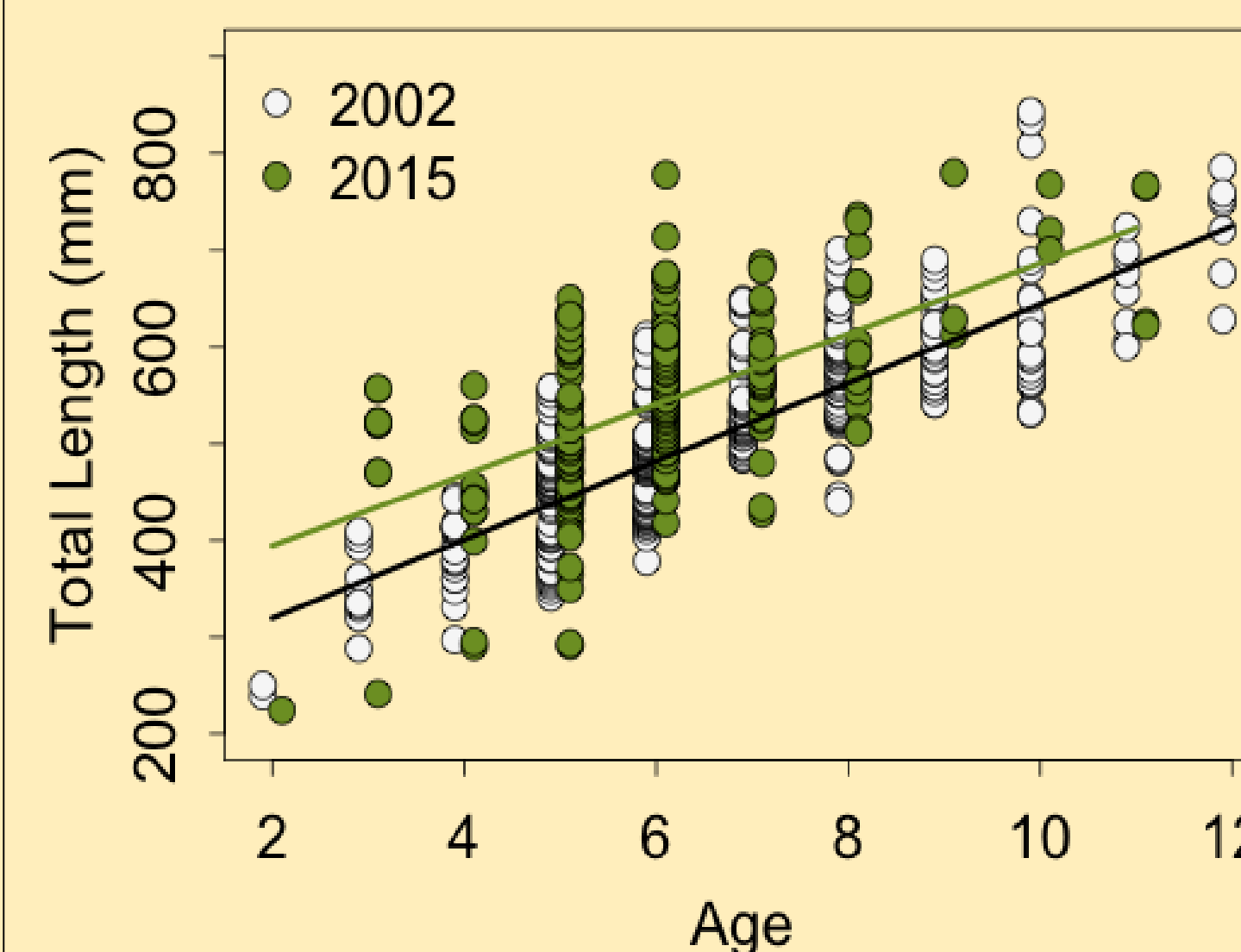


Figure 3. Mean lengths at age

- Mortality rate did not differ between 2002 (34%) and 2015 (45%; $p = 0.109$).

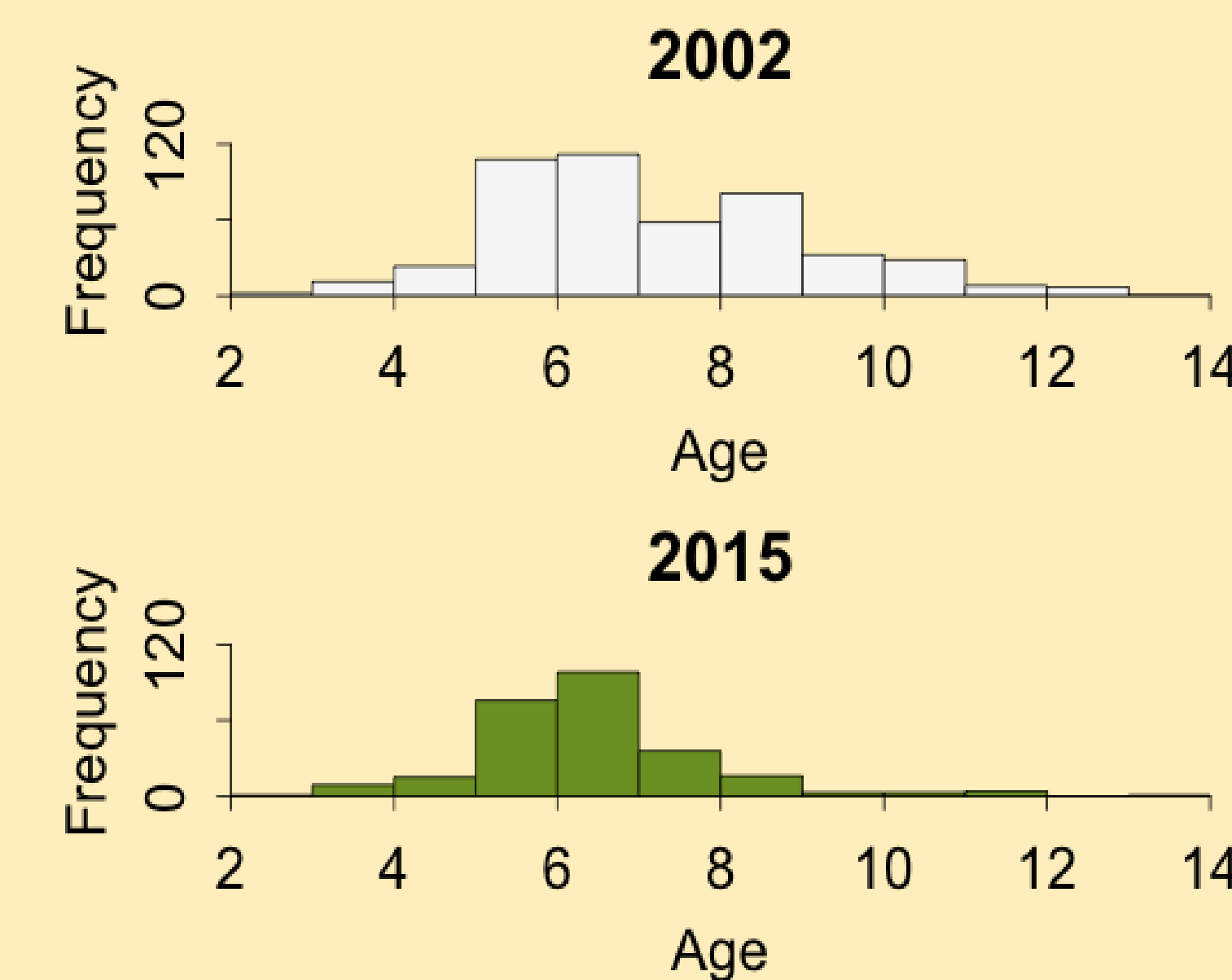


Figure 2. Age frequencies

- Mean relative weight did not differ between 2002 and 2015 ($p = 0.829$). The mean relative weight for Burbot from both years combined was 132.

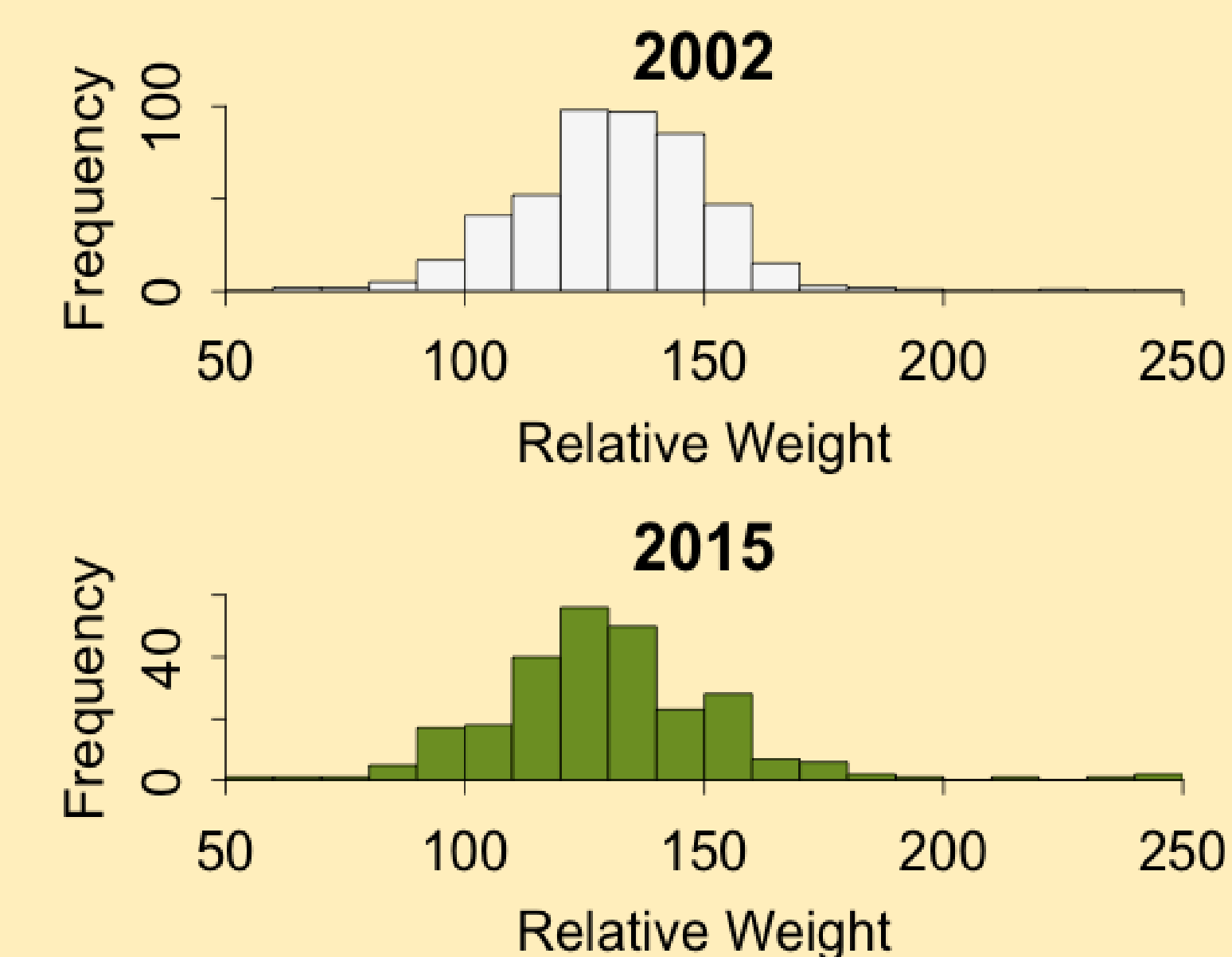


Figure 4. Histograms of relative weights



Source: <http://tinyurl.com/jamkslt>

Conclusions

- Leech Lake Burbot were longer on average in 2015 than in 2002 (Figure 1).
- Leech Lake Burbot were younger on average and not as long-lived in 2015 than in 2002 (Figure 2).
- Leech Lake Burbot appeared to grow faster in 2015 than in 2002 (Figure 3).
- Leech Lake Burbot were in very good condition. Mean relative weights of Burbot in both years were much greater than 100, which represents the 75th percentile of mean weights from throughout the range of Burbot (Figure 4).

Recommendations

- Continue to annually collect harvest, length, weight, and age data from Leech Lake Burbot during the International Eelpout Festival.
- Monitor temporal changes in population dynamics of Leech Lake Burbot.

Acknowledgements

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